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ABSTRACT

These bidding specifications describe requirements for a turn-key automated circulation system for the University of Oklahoma Libraries. An integrated systems approach is planned, and requirements are presented for various subsystems: acquisitions, fund accounting, reserve room, and bibliographic and serials control. Also outlined are hardware needs for system support, reports and management information expected of the system, and staff training to be provided by the vendor. (Author/RAA)

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AN INTEGRATED SYSTEMS APPROACH:

A DESCRIPTION OF AN AUTOMATED CIRCULATION MANAGEMENT SYSTEM

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December 1980

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ABSTRACT

An integrated systems approach is planned by the University of Oklahoma Libraries. The requirements for a turn-key automated circulation system are described. The first components of the system will be the circulation and reserve book room functions. Other subsystems are planned and described, including acquisitions, fund accounting, bibliographic and serials control. Hardware needs for system support plus the reports and management information expected from the system are outlined.

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TABLE OF CONTENTS

I.	Introduction	Page i
II.	General Description	1
	A. The University	1
	B. The Library	1
III.	General Systems Description	4
	A. General Systems Requirements	4
IV.	Functional Description	7
	A. Circulation	7
	1. Patron	7
	2. Circulation File Maintenance	9
	3. Reserve Function	16
	B. Acquisitions Description	16
	1. Fund Accounting	18
	C. Bibliographic Subsystem and File Maintenance in MARC II Format	20
	D. Serials	23
V.	Printed Reports, Notices and Management Information	23
VI.	Staff Training	25
VII.	Networking Capabilities	26
VIII.	Technical Specifications	27
	A. Hardware	27
	B. Software	32
	C. Maintenance	37
	C. Labels	38

I. Introduction

The University of Oklahoma Libraries went out for bid for a packaged automated circulation system in July 1980. The document presented herein is the document sent to a number of vendors requesting system proposals. This invitation to bid covers the requirements for the installation of hardware and software to support a book circulation system.

Not included is the "boiler plate" which was attached to the document by the University Purchasing Office. The boiler plate outlines payment requirements, delivery schedule, evaluation procedures, performance bond requirements in addition to several other items.

Because the University is a state institution supported by public funds, the Director of Purchasing recommended that the University Libraries go out for bid. Privately supported institutions do not necessarily have to follow this procedure. However, a private institution would also want to sign a contract document with their vendor containing system specifications and requirements.

The bid closing date was July 31, 1980. Proposals were received from IBM, CLSI, and DataPhase. An evaluation team was formed within the University Libraries in order to assess and compare the bids. Based on the advice of the evaluation team and on other information gathered by the Purchasing Office, the Director of Purchasing recommended to the University Regents that the contract be awarded to DataPhase. The contract was awarded at the September 1980 Regents meeting.

When writing bid specifications for an automated system, a great deal of insight and assistance can be gained from reading bid proposals generated by other libraries. Documents drawn upon heavily in writing this proposal were

bid specifications from:

Atlanta Public Library, Atlanta, Georgia

Tulsa City-County Library, Tulsa, Oklahoma

University of Nebraska-Lincoln, Lincoln, Nebraska

II. General Description

A. The University

The University of Oklahoma was chartered by the Territorial Legislature on December 19, 1880, just a year and one-half after the Oklahoma Territory had been settled by the land run of 1889.

The University operates through three major administrative units: the Main Campus in Norman, the Law School in Norman and the Health Sciences Center in Oklahoma City, with its extension in Tulsa. Each campus with its own faculty and administrative staff maintains some degree of autonomy within policies established by the Board of Regents.

The Main Campus has approximately 21,000 students, 750 faculty and 3800 staff. Present plans call for the initial establishment of automated circulation at the University Libraries of the Norman Main Campus (excluding Law). It is projected that in the future it may be desirable to add capabilities and functions to this basic system at the Libraries and to extend all or part of these capabilities to the Law School, the Health Sciences Center and to neighboring independent library systems (e.g., Pioneer Multi-County Library System headquartered in Norman, Oklahoma).

B. The Library

The University Libraries on Main Campus in Norman consist of Bizzell Memorial Library and eight branches: Architecture, Art, Chem-Math, Drama, Engineering, Geology, Music and Physics. Three special collections are housed in Bizzell: Bass, History of Science, and rare books. The Western History Collections containing archives, photographs and a library collection is located in Monnet Hall.
(For volumes held and circulation figures see page 2.)

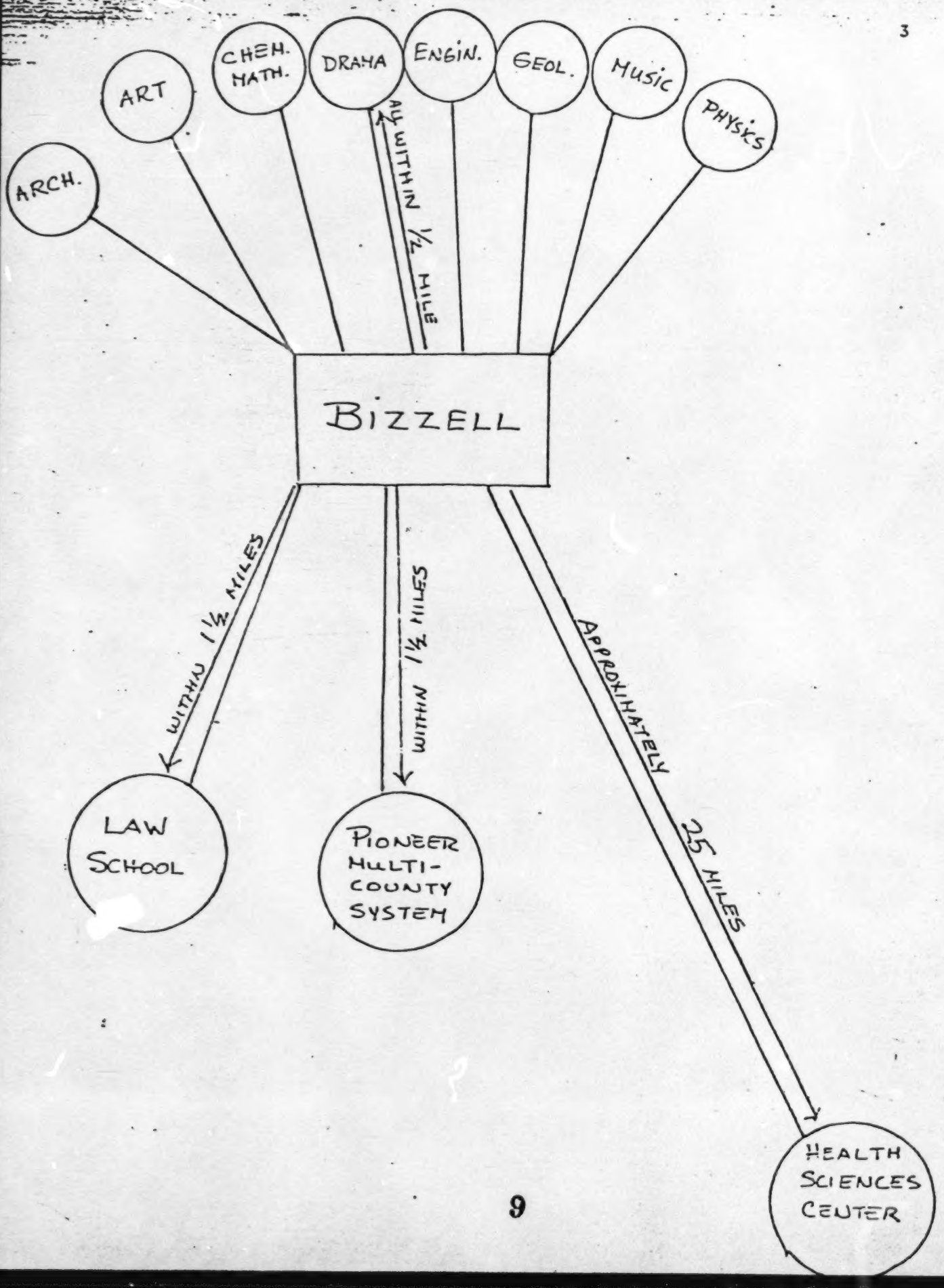
RECORDED CIRCULATION AND VOLUMES HELD

LIBRARY UNIT	VOLUMES HELD (as of June 30,1979)	CIRCULATION FY 1977/78	CIRCULATION FY 1978,79
Bizzell (Main)	1,196,899	137,490	131,432
Reserve		26,496	44,129
Architecture	9,320	14,987	18,847
Art	9,620	4,552	5,009
Chem-Math	47,950	6,874	5,282
Drama	7,479	3,297	3,051
Engineering	34,928	21,928	27,425
Geology	62,074	15,184	14,522
Music	15,948	16,480	11,929
Physics	15,782	3,275	2,899
Western History	80,000		
Bass Collection	17,260		
History of Science	49,000		

Home Loans for Bizzell and Branches:
to faculty : 17,235
to students: 160,965
Total: 178,200

Reserve Loans for Bizzell and Branches:
in building: 71,304
overnight : 15,021
Total: 86,325

Law Library	174,653		38,602
Health Sciences Center	128,676	86,925	66,020
Pioneer Multi-County	178,948		717,668


ARCH.
ART
CHEM. MATH.
DRAMA
ENGIN.
GEOL.
MUSIC
PHYSICS
ALL WITHIN 1/2 MILE
BIZZELL
WITHIN 1½ MILES
WITHIN 1½ MILES
APPROXIMATELY 25 MILES
LAW SCHOOL
PIONEER MULTI-COUNTY SYSTEM
HEALTH SCIENCES CENTER

III. GENERAL SYSTEMS DESCRIPTION

The proposed system would initially serve the University of Oklahoma Libraries, Norman. The central processing unit will be located in Bizzell Memorial Library, the main facility for the University Libraries. Six terminals will be installed during Phase I. Phases II and III will then bring the eight branch libraries and the three special collections on to the system with an additional 32 terminals.

The University Libraries are looking towards a total system approach. The system and/or bibliographic database will be used as a finding tool for items entered in the bibliographic data base.

Specific subsystems required at installation are:

1. Circulation
2. Reserve
3. Acquisitions
4. Fund Accounting
5. Bibliographic (all necessary authority control files to be added later)

A Serials control system is required but can be implemented at a future date.

Because of the specialized technical nature of automated bibliographic processing, file update, and retrieval, the University of Oklahoma Libraries will contract with a single qualified vendor to provide all hardware, software, documentation, staff training and maintenance (hardware and software) for the complete system described above. OU seeks a vendor with proven experience in the field of automated library bibliographic systems. The vendor must have systems operational, which can be demonstrated in use, at other academic libraries.

A. GENERAL SYSTEM REQUIREMENTS

The University of Oklahoma Libraries have established the following system requirements. The system shall:

1. Use on-line data files for all functions. Bibliographic and item data structures shall be hierarchical so that data common to the various library locations shall not be stored more than once. Piece level control and location listings shall be linked to common bibliographic data.
2. Utilize the full MARC II record format.
3. Be capable of expansion to accomodate all items owned by the University of Oklahoma Libraries.
4. Be capable of managing all circulation activites, regular and reserve, within the operational requirements of the libraries.
5. Serve as a "finding" tool for on-line retrieval of any item.
6. Offer automatic data entry through OCR scanning.
7. Have on-line editing capability, password protected.
8. Have established procedures for creating and editing files by terminal operators. All procedures are to be clear and understandable to clerical staff.
9. Be capable of operating on a production/on-going basis by non-professional and clerical employees of the libraries.
10. Be preferably a "turnkey" system and consist of all data processing equipment, peripherals, software and training and consulting necessary for the University of Oklahoma to begin operations without local development or enhancement.
11. Permit transfer of existing machine readable files, e.g. OCLC archival records, to the system. The vendor must indicate capabilities for doing so.
12. Utilize industry standard minicomputer hardware and be upward compatible as technical advances in hardware and software occur.

13. Allow messages to be sent between terminals for intra-library loan and other purposes.

14. Have growth capacity of 64 terminals on the CPU proposed.

15. Have optional capability for communicating or interfacing with OU's IBM 370/158.

16. Be able to create tape output of processed files for COM production.

17. Allow library to change system parameters without intervention by the vendor. The parameters are location specific and may vary from one unit to another.

18. Allow file inquiry by:

    *ISSN

    *ISBN

    *Library of Congress card number

    *Author key

    *Call numbers (Dewey, LC, and other forms of classification)

    *Title

    **Author/Title

    *Unique item number

    *Subject

    **Added entries - personal, corporate, series

    *OCLC number

    (*required; **highly desirable)

19. Produce a full range of management reports and notices on demand.

20. Provide direct data communications between ORU, TCCL and other automated systems.

21. Provide for system security which can be assigned herarchically on an individual and terminal bases.

22. Permit the library to segregate holdings by materials type and classification. This procedure must be valid for multiple locations in the library.

23. Provide direct access to various bibliographic utilities and other on-line data bases.

IV. FUNCTIONAL DESCRIPTION

A. Circulation

The circulation function depends on three files: the patron file and the item file (both of which link to the bibliographic file.) Circulation consists of charging items, discharging items, and recording charges and credits to the appropriate patron and item files. Charge and discharge will consist of reading machine-encoded numbers with an OCR-A scanner. System must signal if material is on "hold" for another patron.

1. PATRON

The term patron means persons who have been registered into the patron file. Any person who is not found in the patron file must be added to the file before borrowing library materials.

Patron Categories

The system must provide for multiple patron categories and be able to produce statistics by those classifications. Loan periods are to be determined by patron category as well as type and location of material. For future expansion, the system should be able to segregate patrons into patron files by campus, by other library systems, and by specified library categories within each of these.

Patron Registration File and Patron Card Production

Patron registration must be done on line and batch mode. The system shall permit borrowers to charge materials on their initial visit. This file shall permit up-date and correction of the information therein and shall allow for the tagging of a patron's record. When patron registration information is determined incorrect, an automatic signal will be activated during the process. The system shall also allow certain patrons or types of patrons to be authorized either to charge or to be restricted from charging certain types of materials--e.g., reference materials.

The vendor shall indicate the type of patron card recommended--paper or plastic, etc--and how the initial production and lost card replacement will be handled. Cards or labels for cards shall be produced in OCR-A. The vendor shall indicate if card production requires special equipment and its cost and also the cost of the patron card blanks.

Patron File (all information may not necessarily reside in the same physical file)

Name of patron	Patron Type
Address (permanent and temporary)	Patron Status
City	Expiration Date
State	ID number/Social Security number
Zip Code	Campus affiliation
Fines/Lost Books	Date since last activity
Delinquency Status	Any other codes or data

This file must be hierarchically password protected.

Patron Blocking

A block may be placed on a patron whom the libraries would like to contact. Charging of materials is prevented until the block is removed.

The following procedures are desired:

1. Placement of blocks for conditions specified by the circulation supervisor.
2. Provision of an audible terminal response when a blocked patron is encountered.
3. Allowance for override of the condition at the discretion of the operator. This file must be hierarchically password protected.

Fines, Other Financial

All fine and other financial information is to be calculated and managed by the system. The system shall:

1. Calculate and attach fines or other assessments to the patron record.
2. Allow for financial clearance of the patron record at the time the book is returned or at the discretion of the circulation supervisor.
3. Provide a tape of all bills and credits to interface with the OU Bursar's system. This system presently runs on an IBM 370/158, OS/VS, CICS/VS.

2. CIRCULATION FILE MAINTENANCE

Vendor shall specify procedures for initial creation of circulation file and for file maintenance; i.e., adding subsequent items, removing lost items, transfers and withdrawals.

Item Input

The item identification number will be read from an optically encoded machine-readable label located on the item. Manual entry of item identifiers must also be possible. The system will verify item numbers to assure that no exceptional conditions exist. Exceptional conditions to be recognized are: (1) item is not on file; (2) item is already in circulation; (3) item has

a 'hold' outstanding; (4) item is missing or lost; (5) item does not circulate; (6) item is from another circulation point. Exceptional conditions for an item will cause an audible alert at the terminal. The ID number for each item loaned will be linked during charging process with the appropriate patron information. The due date will be entered and stored in association with the item and patron information. Due dates will be automatically assigned according to a stored table of loan periods per borrower and/or item category. The due date may be overridden manually. Provision must be made for entry of items not in the file at check out time with the flagging of records to denote "provisional record" and with automatic routing to conversion unit.

Charging Library Items

The charge procedure is loaning of a library item to a valid patron for a specified period of time. Inputs to the system will be from optically encoded patron identification label, optically encoded library item number label, or their manually entered label numbers. These inputs will be supported by full on-line patron and circulation/bibliographic files. The encoded labels must be OCR-A.

The system will verify patron status validity. Patrons not on file, and patrons that are "restricted borrowers", will be excluded at this point; the system must cause an audible alarm for these conditions.

The following access keys are required by the libraries:

1. Patron file
   a. patron name
   b. patron unique number
   c. patron social security number (if used as the unique number)

Discharge of Library Items

The discharging procedure is the removal of a library item from in-circulation status. The OCR-A item label, the manually keyed item label number, or the call number may be used to discharge library materials.

Update of Files on Discharge

The discharge programs must perform the following file updates:

a. Match returned date information to patron status and update financial obligation file if necessary. (See: overdue processing)

b. Update statistics.

c. update "hold" file for notice preparation if applicable.

d. Remove item from in-circulation status.

Renewal of Library Items

The "renewal" procedure is the extension of the loan period of those library materials currently checked out. "Renewal" is functionally identical to charging of an item which is already charged to the patron. The renewal procedure proposed must be capable of satisfying all of the functions of charge and discharge, and must be accomplished within less than five seconds for 95 percent of the transactions. Vendor must specify methodology proposed.

Loan Periods for Library Items

"Loan period" is the amount of time an item can be borrowed by a patron. A variety of loan periods are used. Provision must be made for a minimum of 25 loan periods. The lengths of these loan periods will be specified by the Library. The library must be able to change loan periods without programmer intervention. Loan periods are assigned at checkout as a function of borrower category, and/or type of materials. Different locations must be able to have different sets of loan periods.

The calendar of due dates for materials should exclude holidays and days the library is closed. The calendar for each location will be put into the system each December for the upcoming year. However, revisions are commonly required throughout the year. The system must be able to handle calendar modifications without programmer intervention.

Placing "holds"

It must be possible to place a hold on a title or a specific copy (item) of a title. Patron number shall be entered either by the OCR wand, by keying the patron number, or by patron name/address search key. The system will verify patron status to assure that the patron is valid. If a patron is invalid, operator action is required before proceeding. Once a patron has been validated, the title specific item will be flagged for trapping at "check-in". When "holds" on a title pass a specified threshold, high usage alerts will be generated.

Trapping "Holds"

An item or title on "hold" will be trapped with an audible signal to the operator that an exceptional condition has occurred. Operator action is necessary before proceeding. Alert occurs at: (1) check-in; (2) renewal; (3) check-out of item never properly checked-in. The system will generate a notice for the patron who requested the "hold". The notice indicates that the book is available, will be held for a specified period of time, and where it should be picked up. The display on the CRT will also give appropriate routing information for the item indicating where it should be sent and to whom. If the location is other than the location where the "hold" is trapped, the item will be routed to that location, and the system will indicate that the item is in transit. When

the book reaches the other location, the system must be updated to indicate that the item has been received and is on the hold shelf. If the item is not charged to a patron within a specific period of time, the item will be released for circulation.

"Hold" Shelf Clearance

The system will provide for the production of a printed list for each location which will be used to clear items from the "hold shelf" which have not been picked up within a specified period of time. The library should be able to change this period of time without programmer intervention. If there is another "hold" on the title, an availability notice will be produced for the next patron in the queue.

"Hold" Queue

The queue algorithm determines which patron should get the next available copy of a title. It should take into account both holds on titles systemwide and holds on specific copies in a specific location. Vendor should specify how the algorithm weighs two demands on the same item.

Double Charges or Temporary Transfers

The system should have the ability to handle cases in which an item is temporarily charged to another location for reserve or regular circulation and then further charged to a patron.

OVERDUE PROCESSING

The purpose of "overdue processing" is to enforce the loan regulations for library items. Overdue items are those not returned by date due and include "lost and missing items".

Overdue Check-in and Processing

The system must be capable of all functions required in discharge as well as the following:

(a) Calculating overdue charges and update of associated records. The system must allow for the possibility of a grace period prior to any fine charge and must reflect the calendar of holidays and closed days in that fine calculation. The fine charges shall be variable depending upon the status of patron and type of material. It must be possible for library personnel to revise or change bill/fines without programmer intervention. Computation is based on: discharge date and date due.

(b) Inquiry and display of patron fines and/or lost book charges.

(c) Overdue item notices. The system shall prepare and print overdue notices upon request or automatically at pre-determined times for overdue items charged to a patron. The system will have the capacity to set the number of days that an item can be overdue before a "second" notice or lost book charge is generated. Vendor shall indicate the type(s) of overdue notices(s) that system can generate and current cost of forms. Vendor shall state which notice type is preferred or recommended. Overdue notices shall include enough data: author, title, unique item number, and call number for item identification.

Billing for "Lost" Material

The system must allow for library personnel to set a threshold (without programmer intervention) representing the number of days an item can be overdue before the item is considered "lost" and a replacement bill is sent to

the patron. The bill will be generated automatically when the "lost" threshold is reached and the price of the book is entered in the system.

Clearance Function

When students, faculty, and staff terminate their employment on campus or leave the university, clearance of all library obligations must occur. The system shall:

1. Provide for clearance.
2. Allow for remarks in patron file regarding clearance.

Missing and Lost Item Function

When specific items are reported as "missing", the libraries will initiate a procedure for search and possible replacement of the item. The system shall:

1. Allow for recording of missing status and prevention of circulation of item if presented.
2. Allow for changing the "missing" status to "lost book" status when a given threshold is reached. The system should then generate a printout in shelflist order by location.
3. "Trap" missing and lost books at time of return.

INVENTORY

The inventory procedure requires that the encoded label for each volume on the shelves be read by the hand-held scanner attached to a portable terminal. Data from the portable terminal will be read into the system, after which the file of all items not on the shelf will automatically be checked against the in-circulation file. A list of all items not charged and not on shelf will be automatically produced by the system. The printout must be in shelf list order by location.

Check Digits

Item identification numbers must be followed by a check digit. The formula used to generate the check digit must be provided by the vendor.

3. RESERVE FUNCTION

Reserve is used when instructor wishes to place personal or library items at the disposal of students for limited periods of time. The loan periods usually range from two hours to three days.

The following functions are requested:

1. Allow addition of reserve items to the system under specific course name, with retrieval by name and course number and instructor.
2. Utilization of patron and item files as regular charging procedures.
3. Provide same default or override loan period assignments as in regular charging procedures.
4. Photocopy files, personal copies and other materials which are not owned by the OU Libraries will be given a unique identifier and will be entered into the system temporarily.
5. Produce lists by course name and number, section, and instructor showing the status of all items on a reserve list.
6. Allow holds to be placed on a reserve book.
7. Require operator intervention before reserve overdues are generated.

B. Acquisitions Subsystem

The acquisitions subsystem automates the activities for ordering, receiving, payment, claims, cancellations, fund accounting, and statistics. The system must provide various printed documents as follows: lists of monographs charged to individual accounts, statistical and fund accounting reports, multiple part order record slips, claim forms, and cancellation lists. It must

provide output to magnetic tape in print image form of the in-process file. It is possible that in the future this tape will be used as input to a COM system. In addition, it must make certain files browsable, such as the outstanding order file and system bibliographic data base. Below is a summary of features required in the acquisitions subsystem.

ORDERING

Pre-order searching: The outstanding order file and bibliographic data base must be searchable on-line from all terminals for screening of orders.

Types of orders: The system will produce order forms and provide for replacement orders by utilizing the bibliographic data already on file without re-keying the data. The system must allow ir the order process for various payment methods: invoicing, prepayment, approval plan purchases, deposit accounts, etc. It must also accomodate the acquisition of gifts and the ordering of free materials. The order data should allow for specification of type of material (records, monographs, serials, films, microforms, etc), status of material (reference, non-circulation, or circulating), number of copies, price, edition, number of volumes, series name and number, fund code, routing location, vendor code, LC number, OCLC number, and ISBN/ISSN. These categories may also be utilized in fund accounting and statistical reports.

The order input will update an outstanding in process file, (orders, gifts, standing orders) produce multiple-part order forms, and purchase orders. The outstanding in process file should be browsable by any terminals in the library system. It should indicate all agencies which have ordered a title and the number of copies ordered by each. The system must have the capability of putting a "hold" on in process items.

RECEIVING

The receiving module should allow for receipt not only of items ordered through the system but also gifts, free publications, standing orders and continuations, approval books, etc. These items would be entered into the system on receipt, in order to get them into the funding accounting and statistical functions. The system must allow for application of credit memos and cancellations.

1. FUND ACCOUNTING

The fund accounting module should allow for several (four or more) levels of nesting, such as systemwide fund status reports, agency (branch and department) fund status reports, and categories within an agency (e.g., serials, monographs, recordings, films, microforms and multiple account numbers). The system must be able to handle four digit account numbers.

Fund status reports must indicate initial budget allocations, and adjustment of same, obligations, encumbrances, expenditures and current unencumbered balance and foreign currency conversion. The rate of exchange must be put in the order record at time of payment. It must allow for partial payment from several accounts for one item.

Fund accounting should provide agency fund status reports and within each a breakdown between expenditures for monographs, other types of materials, and for various special funds.

Upon verification of material received, the system will produce an invoice summary for invoices which pass the computer balance routine and which are ready for vouchers. The system will also print a "suspended invoice" report for invoices which did not balance. All fiscal records for payments made will

be recorded and have on-line access.

Accounting categories will be updated upon receipt of material. All fund files will be hierarchically password protected.

CLAIMING

Library may specify lapse time(s) following placement of an order after which a claim notice will automatically be generated for the vendor. System must be able to differentiate between foreign and domestic dealers.

CANCELLATIONS

Library may specify lapse time following the placement of an order after which the system will automatically generate a cancellation notice for both the vendor and the ordering agency. Cancellations may also be initiated at will by the Acquisitions Department staff; such action will automatically generate the cancellation notices for the vendor and the ordering agency, and will automatically adjust fund encumbrances.

VENDOR FILE

A vendor name/address file will be maintained, which will be queried automatically for production of purchase orders. The system must have the capability of differentiating between domestic and foreign vendors/publishers. Also, the system should have the capability of generating mailing labels or an address form for window envelopes.

TRACKING SYSTEM AND COM PROCESSING INFORMATION LIST

The subsystem will provide the ability to track items from the time they are ordered (or entered into the system) until they are received by the ordering agency. A report will be generated automatically whenever a library-specified period of time has passed and the item has not left a particular processing department. The subsystem will provide for a periodic printout of in process titles and status information.

HIGH USAGE ALERTS AND "HOLDS"

The system should allow for an automatic generation of high usage alerts whenever a library-specified threshold is reached for the number of "holds" placed against an on-order title. It must be possible to place holds against any on-order title. When the item is received, the system should notify the Acquisitions Department that this title has a "hold(s)" waiting.

C. Bibliographic Subsystem and File Maintenance in MARC-II Format

Retrospective cataloging files will be converted to machine-readable format. OU utilizes the OCLC on-line cataloging system for creation of initial bibliographic records for new titles. Both the retrospective files and new cataloging will be in MARC II communications format. These files will be provided to the vendor in order to input the bibliographic files into the system; the vendor system will thereafter maintain the full MARC II format for bibliographic records and utilize appropriate data from them in each subsystem. New cataloging in MARC II format will be entered into the system's data base in the following ways:

1. The system design and program code supplied by the vendor shall have a module with the capability of accepting bibliographic input directly from an OCLC Beehive 100 terminal printer port, convert the information into MARC II format, and enter it into the system files.
2. OCLC archive tapes will be mounted on the system tape drive, and new titles entered into the data base from these tapes. The tape specifications are:

   9 track
   1600 b.p.i.
   unblocked variable length records
   ASCII code

Full description of OCLC tape format is available from OCLC, Inc.

3. In addition to input of OCLC data, the system must allow for creation of MARC II formatted records directly on the library system. The system must be capable of handling "see" and "see also" references.

Upon entering a new record, the system must search for possible duplicate records. Operators must be notified if duplicate record exists. The ability to modify these records must be password protected. Once new titles are entered into the system, all updating and deleting must take place directly on line in Technical Services which will have a CRT with OCLC MARC II ASCII character set. The entire MARC II record must be capable of being recalled and it must be possible to edit any portion of the record without re-editing the entire record. A transaction log of the edit, with operator identification, plus a printout of the edit transactions are required.

In the future the University of Oklahoma Libraries may wish to copy its bibliographic file for creation of a COM catalog or for other libraries. This system must be able to copy the file onto a 9 track magnetic tape with 1600 b.p.i.; the output must be in MARC II communications formats as described in the following OCLC and Library of Congress documents:

OCLC: On-line systems

LC: MARC serials editing guide, second CONSER edition

Holdings must be updated for both the circulation file and the bibliographic file. The OCLC document listed above is based on the LC MARC II formats and is an expansion and amplification of the LC formats.

Print train characters must be translated from the data base for display on system terminals, with special non-displayable characters translated to an acceptable alternate, e.g. ä to ae.

Vendor should specify sufficient on-line storage to accomodate an initial bibliographic file of 500,000 records and its associated indexes. Anticipated growth is 50,000 records per year for the next five years.

SEARCH (INQUIRY)

It must be possible to search: title information by full title, key word, or algorithm; author/title by boolian search; author information. Item information may be identified by the algorithm search or by searching the unique machine-encoded number. Patron information should be searchable by patron name, ID number or by unique machine-encoded number.

The University of Oklahoma requires subject search capability. The vendor must specify the keys involved. Specifically, are Library of Congress headings, names, titles and key words searchable? If yes, by what keys?

Searchability by specified sub-fields of MARC II tag information is required. The data base and files must be searchable from all circulation terminals. The Boolean capability with "AND" and "OR" conditions is desirable to restrict generalized searches. Truncation of call number searches to retrieve general subject classes of materials is desirable.

Files to be maintained in the bibliographic subsystem:

Bibliographic File (all fields must be variable length)

Author (main entry)	Material type
Title	Serials Holdings
Edition	ISBN or ISSN
Call Number	LC Card Number
Publisher	Notes
Place of Publication	
Copyright/Printing Date	

Item File (linked to Bibliographic File)

Unique System Number	Circulation Period
Circulation Count	Hold Status
Status	Owning Library
Date Due	ID of Patron Circulating
Location	

D. Serials Control Subsystem

The University of Oklahoma requires that the vendor supply a serials control subsystem by a mutually agreed upon date. The minimum requirements shall be:

1. Serials acquisitions, including order and payment
2. Binding control
3. Automatic claiming
4. The ability to enter holdings (both single issue and volume)
5. Automatic check-in

V. PRINTED REPORTS, NOTICES AND MANAGEMENT INFORMATION

The system must be capable of producing hard copy reports on demand. Each morning the system should prompt the operator concerning which reports must be printed that day. The schedules should have provision for holidays and weekend closings. All notices and statistical report formats must be capable of modification by the library through profile options without intervention of a local programmer. Specific notices required are:

(1) "Hold" shelf clearance by location

(2) Missing items, including items on which "holds" have been outstanding beyond specified period printed in call number order by location

(3) Overdue shelf list search for items declared returned by patrons for each location

(4) Statistical reports by terminal, by location, by patron categories, by item categories, by call number breakdwon. Statistical reports should be monthly, quarterly, year-to-date, annual cumulation, and on demand

(5) First and second overdue notices and bills. The length of time between due date and first overdue notice, between first and second overdue notice, and bill should be able to be changed by the library without programmer intervention.

(6) "Hold available" notices to inform a patron that an item on which he has placed a "hold" is now available, specifying where it should be picked up and how long it will be held. Reports (5) and (6) must be printed on hard copy suitable for mailing.

(7) High usage alerts, when more than a defined number of holds have been placed on a title

(8) Call number labels for book spines

(9) Hold "unavailable notice" for patrons

(10) Reserve statistics must be maintained separately

Statistical information must be provided on magnetic tape for use in off-time statistical analysis.

Reports

Samples of all reports and notices generated by the system shall be furnished with an indication of the frequencies of each report and the options (categories and cross tabulations) available.

Management Reports and Notices

a. Listings of items that circulate more than a specified number of times

b. Listings of items that have not circulated in a specific period classified by location and shelf list order

c. Intra-library loan pickup lists

d. Overdue shelf list search reports

e. Listings of master file by category, shelf, author, title output in hard copy or on magnetic tape for possible COM production

f. All reports and printed notices are to be available by branch, Bizzell Library and total system

g. Daily, weekly, and monthly cataloging reports

VI. STAFF TRAINING

The system proposed must not require a high level of data processing expertise at the machine site or in the library branches. It must be operated with ease by present library staff and require little training for new staff. All continuing software maintenance will be solely the responsibility of the vendor.

All staff will be hired and supervised by the University of Oklahoma Libraries. The contracting vendor will be responsible for staff training on all subsystems for the following staff groups:

A. Library Administrators. This level shall cover the capabilities of automatic data processing with specific emphasis on circulation systems, an overview of the capabilities of the system, and its ability to handle the various management tasks required by the library.

B. Library line supervisors. Included in this category will be those supervisory personnel who will be in charge of the circulation system as well as key staff. This training should be sufficiently detailed

to permit the supervisor to understand and perform all supervisory override and operator functions; to understand the equipment and its usage; to understand the maintenance procedures as well as to include preventive maintenance; to be able to instruct circulation and clerical personnel in the use of the equipment.

C. Operations personnel. Included in this category are the clerks and student assistants who will be responsible for the day-to-day operation of the circulation system. Upon completion of training, they should have sufficient knowledge to understand correct operating procedures and error correction requirements. Training of the operations personnel must coincide with the installation of the equipment at locations to be specified.

D. Data Processing Personnel. Vendor shall provide all information regarding how the vendor system may be supported locally by University personnel. In the future there may be a need to train local personnel in the system programming language, logic, and code.

This training is for back-up only. The system must not require trained data processing staff to operate the system; the system must be fully operational by existing staff, with software and hardware maintenance fully provided by the vendor.

VII. NETWORKING CAPABILITIES

The system shall permit a networking approach among the libraries of the University of Oklahoma campuses and be capable of future extension to other public, private and university libraries in Oklahoma. It should also be capable of networking on a state, regional and national basis. Files should be designed to permit common files to be maintained with specific ownership and location provision. Telecommunication capability with other vendor installed systems is required. Statistical reports should be generated on all lending

with the ability to differentiate between inter and intra state transactions. These should further be broken down by type of library, e.g., university, public, special.

Intra- and Inter-Library Loans

The capability to permit loans among campus branches and among campuses is required. The means to record loans outside the system on an inter-library loan basis is also required. Branch-to-branch and terminal-to-terminal communications facilities must be provided.

VIII. TECHNICAL SPECIFICATIONS

Vendors shall provide computer hardware and software, maintenance, and supplied as per specifications described. All components are to be identified by manufacturer and model number.

A. Hardware Requirements

Central Processor(s)

The proposed minicomputer hardware shall provide at time of installation, enough core memory to operate library system software and 16 simultaneous terminals, plus at least one third excess memory over minimum required. Furthermore, enough memory should be proposed to operate a second complement for 16 simultaneous terminals without degraded response time.

HARDWARE/SOFTWARE REQUIREMENTS

All equipment proposed should specify original manufacturer's name, model number, and have attached a copy of equipment specifications. If vendor supplies non-standard equipment giving additional capability, specify capabilities and describe equipment.

Vendor must provide a detailed system diagram illustrating the complete system configuration. This diagram should include all telecommunications lines and line speeds, central library hardware (including console and processor), satellite controllers, switching devices, terminals, printers, etc. Hardware should be maintained by original equipment manufacturers (OEM).

PROCESSOR

The system should be supported by a stand-alone processor totally dedicated to the turnkey system. This turnkey system must not necessitate the use of any specially trained data processing staff, but be capable of operation by library personnel. The system should be capable of future expansion, and the extend of expansion should be specified. The processor and storage should be large enough to support the entire library system for a growth period of five years. Sufficient main memory should be proposed to be able to read MARC II formatted records in blocks of 100. MARC II formatted records are variable length, with variable length fields.

CONSOLE

Console keyboard and logging device should be specified, including original manufacturer and number.

Disk Storage

The vendor shall bid enough disk storage in the initial installation to accomodate all system programs and OS overhead; bibliographic data for 750,000 records and item control information for 1.4 million items; and patron data for 26,000 patrons. All storage expansion should be possible without alterations to hardware (except by addition of disk drives).

Disk copying capabilities to tape shall be provided such that user may back up all data files and system software on a scheduled basis without interference with operations.

Sizes of each file including indexes should be specified. The disk capacity (including the capacity for growth) should be stated in terms of real storage available under the access system. Quote prices for additional disk drives and indicate model numbers.

Tape Drives

Two drives which must be 9 track, 1600 b.p.i., 125 i.p.s. minimum speed. One drive must be available for input of data separate from the operational log tape drive. A second drive must be available as a logging device; if the transaction log is on disk in addition to or as an alternative to the second tape drive, please specify. Tape drives must have an audible and visible failure indicator. Under all conditions, there must be two copies of the transaction file at all times, written by separate devices on separate controllers. One drive should be switchable 800/1600 b.p.i.

TERMINAL PRINTERS

Vendor must provide a minimum of one terminal printer for the system which will print the following information: (1) routing slips for items on hold; (2) list of items charged to a patron and/or overdue to a patron, itemized by specific item and charge; and (3) routing slips for items returned to locations not the principal owning location.

Vendor must specify costs, give manufacturer number and name, speed, type of print mechanisms, and size and cost of paper utilized. Specify whether they use continuous form or individual stock, whether impact, electrostratic, ink ket, or other.

Vendor must furnish prices on additional terminal printers which may be used with CRT's:

3 terminals

6 terminals

12 terminals

24 terminals

Line Printer

One medium-speed line printer is required. Must be high quality print for production of spine labels. Specify speed being quoted. If non-impact type printer, specify type of reproduction. Can the ALA print train be supplied on the line printer?

TERMINALS

Vendor should furnish complete description of terminals proposed, including but not limited to, baud rate(s), switchable or non-switchable, full or half duplex, character set(s), code, manufacturer number, keyboard, OCR-A scanner characteristics including OEM and number, special terminal characteristics such as touch screens or portable terminals (including original manufacturer and number) and any other information which may be pertinent.

Vendor must furnish prices on display terminals equipped with OCR-A Recognition Equipment (or equivalent) wand:

6 terminals OCR-A

16 terminals

32 terminals

48 terminals

64 terminals

Vendor must have available portable terminals with OCR-A scanners for use in inventory and as back-up during down time.

Terminal Ports

The hardware shall have the capacity to accept 16 terminals in the initial installation and shall include the number of ports necessary to add the second group of 16 terminals without further impact on hardware or software. The incremental cost to accept the second group of 16 terminals up to 32 total should be specified. Incremental costs on hardware to accept 48 and 64 terminals shall also be indicated.

Transmission Rate to Terminals

Transmission rate of at least 1200 baud from CPU to terminals, both local and remote, is required. Vendor shall specify transmission rates available for both remote and local terminals and cost options relating to same.

TELECOMMUNIGATIONS NETWORK

Modems

Vendor should specify manufacturer's number and model number for modems proposed and should specify whether they are separate units or built into some other item of equipment such as terminals. Also provided should be technical

specifications (i.e., baud rates (switchable or unswitchable), synchronous or a-synchronous, parity check, full or half duplex, etc.). If Bell System modems are proposed, it should be specified whether the price is included in the first year warranty or whether this is a separate item to be budgeted by the University of Oklahoma Libraries.

Telecommunications lines

Baud rates required should be specified. It should be clear in the teleprocessing network diagram whether or not any of the lines are multi-dropped. Also, any special switching arrangements should be specified. If lines of different baud rates are proposed, the number of lines required for each line speed should be specified. Lines must be dedicated.

The network diagram required must include proposed line speeds, multidrops, satellite controllers, switching devices, central hardware, terminals, printers, etc.

Power Source Control

Hardware bid shall provide protection against power failure and power fluctuations for the equipment.

B. Software

System Software

Vendor must specify the operating system proposed for the central processor. An industry-supported operating system is preferred which would allow the University of Oklahoma to modify and enhance operations in the future if required. Vendor must agree to install the latest release of this operating system within nine months of its release by the hardware manufacturer and to make appropriate modifications in vendor application software necessary to utilize the latest version of the operating system. Specify the language under which the teleprocessing module is written.

Applications Program Language

A high level language is preferred which would allow the University of Oklahoma to make local changes in applications programs if necessary.

Variable Length Records

Variable length records in all data fields are desirable for storage economy purposes.

Software Documentation

Full user documentation shall be provided.

Applications Programs

Applications programs supplied should be capable of performing all functions requested in the General and Functional Specifications.

Applications software

It is desired that the vendor specify the language(s) under which the applications programs are written and whether or not the hardware manufacturer furnishes a compiler or assembler for the language(s) utilized. The vendor should also specify whether or not a read-only-memory interpreter is furnished if the language is interpretive.

Changes in Applications Programs

All future modifications, enhancements, and additions to the system shall be made available to the University of Oklahoma at no additional charge.

If the vendor has no software existing for certain subsystems or functions previously outlined, he shall provide a detailed plan for each software module and for the overall hardware design as to how each will be designed and operated.

Special attention should be paid to file structures, indexing methods, disk retrieval times, telephone line sending and receiving times, and any other considerations which will impede response time on a system of this size.

Specify all other languages available on the system for local programming and whether they are interpretive or compiled. The University of Oklahoma Libraries has the option of doing additional programs on the system; however, the vendor will be expected to maintain all vendor-supplied software.

Data Entry

Procedures for the creation or modification of records in all files shall exist for:

1. "On-the-fly" charging.
2. Record creation and/or record modification.
3. From existing machine-readable data bases (i.e., OCLC)
4. Systematic entry from shelf list.
5. Use of commercial data bases.

Vendor should suggest available procedures in each category. System shall possess established procedures for data entry and shall provide training for same.

File Descriptions of Applications Software

Complete discriptions of all files maintained by the system applications programs, record structures of all files, and details of all algorithms which access the records must be provided. The description should make clear which files are accessed by hashing or keys and which are accessed through indexes.

File Organization

Files should be organized in a hierarchical, tree-like structure so that data is stored only once, and multiple levels of data in this structure are allowed.

File Access Techniques

It is desirable that the system be capable of inquiring on any (given) data element. However, for the University of Oklahoma, this access shall include, but not necessarily be limited to: author, title, call number, item number, subject headings, added entries, series, patron name and ID fields. Data fields to be accessed for routine, repetitive operations should be indexed for more rapid file access. Provisions for accessing Dewey, LC, and SuDoc numbers should be specified.

File Access Time

It must be demonstrated that response time will not decrease significantly as the data base grows. Response time for all transactions and inquiries must remain constant even if the bibliographic item file sizes grow by 100 percent. Response times must average not more than two seconds 95 percent of the time for circulation transactions and not more than five seconds 95 percent of the time for inquiry transactions. Vendor should also address the questions of response time in future functional expansions of the system.

Interface with a Host Computer

The capability for communicating with an IBM 370/158 is necessary. The transfer of data from one to the other via tape is required for purposes of creating and maintaining patron files and giving the Office of the Bursar information on files and lost book charges.

Data Base Maintenance-Security

Procedures shall exist for maintenance and back-up of all on-line data bases such that data contained or transactions performed will not be lost due to equipment failures (e.g., disk or head crash, power failures, etc.). Vendor shall specify recommended procedures.

System Crash Procedures

Library operations must continue during times when the computer is down. Procedure shall be specified for:

1. Manual procedures for recording and for updating files.
2. Secondary recording devices for backing up computer operations.

Back-up

Complete description of all back-up procedures and hardware should be presented in the proposal. Becuase of the magnitude of this system, considerable redundancy is desired; manual logging for later keying of transactions during the down periods should be a last resort and is acceptable only in low-volume locations. One peripheral device (i.e., tape drive or disk drive) should log transactions other than inquiries as they are made. The log records should be date and time stamped. The system should, in case of failure, have the capability of losing only a portion of one transaction.

Offline Recording Devices

Offline recording devices for system back-up or inventory control shall be specified as an option.

Serial and Monographic Sets Handling

Specialized handling is required for serial titles and monographic sets. The system must allow for the entry of holdings These holdings must be displayed with other bibliographic data: i.e. call number, author, title, subject, ISSN, and series. The system must also provide for specific piece level control for those specific bound and unbound items. System must be able to handle "bound with" items and analyzed series.

Housekeeping functions and reconstruction of indexes must be background jobs and must not require the on-line system to be down.

C. Maintenance

Vendor must guarantee both hardware and software for 12 months and on a separate maintenance contract annually thereafter. He shall list the locations of maintenance personnel for software and hardware in addition to other maintenance details. Maintenance personnel must be on-site within 12 hours of a hardware failure. All equipment and components to repair hardware failures shall be available within 24 hours of the time of the failure. Hours and days of the week that repair hardware and staff are available is to be specified. Services should be avialable in the Oklahoma City metropolitan area. In case of a software failure a 4 hour response from the time of the failure is required.

Specify annual maintenance costs per year for years two through five after the first year warrenty expires. Costs should be given for:

1. sixteen hours per day, Monday through Saturday. Sunday maintenance should be given on a per hour charge.
2. eight hours a day, Monday through Saturday. Evening and Sunday maintenance should be given on a per hour basis.

A trouble desk for the reporting of problems from the vendor is required. The vendor must take full responsibility for the maintenance of the total system.

A list of all hardware components listing both brand and model number is required from the vendor. Mean time between failures (MTBF) for all components should be quoted. Based on the MTBF a thirty day test will be run prior to the acceptance of each subsystem. The total system must run with no more than 3% down time for sixty consecutive days.

The vendor must include his maintenance policy, location and number of personnel qualified to maintain the equipment and software and the procedure

for contacting maintenance personnel. He should also give all costs necessary to keep the system in good operating condition, including cost of preventive and on call services, parts, labor, travel and test equipment. Should the vendor become unable to support the system with hardware and software maintenance at a level which OU finds acceptable, specify a recommended alternate maintenance plan.

D. Labels

Vendor must quote a price for a one year start-up supply of machine-encoded labels as part of the first year implementation of the system.

The system shall use industry standard OCR-A equipment. Labels shall be of high quality and available in single/double bases. Label quality bid shall be UL equivalent, Avery-Destrux stock, or give equivalent performance regarding durability and readability. State also if photo-produced or impact printed and whether or not die-cut. Specify size of labels. Unit costs should be specified. Quote prices for 1,500,000 labels, coded OCR-A. Hardware or techniques for local production of labels should be proposed. Lead time for acquisition of labels from vendor shall be indicated. Purchase of an additional quantity of labels shall be negotiated with vendor based on funds available to the University of Oklahoma. Continuing costs for years two through five should also be supplied. All other expendable supplies required shall be specified.